(FILE 'HOME' ENTERED AT 10:35:54 ON 16 FEB 2000)

FILE 'CAPLUS, MEDLINE' ENTERED AT 10:36:13 ON 16 FEB 2000
L1 517 S (THERMOTOGA OR THERMATOGA)(2W)(NEAPOLITANA OR MARITIMA)
L2 25 S L1(5A)(DNA POLYMERASE#)
L3 22 DUPLICATE REMOVE L2 (3 DUPLICATES REMOVED)

=> d 1-22 ibib ab

L3 ANSWER 1 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:46954 CAPLUS
TITLE: Thermostable DNA polymerases from Thermotoga and mutants and their use in DNA sequencing and amplification
INVENTOR(S): Hughes, A. John; Chatterjee, Deb K.
PATENT ASSIGNEE(S): Life Technologies, Inc., USA
SOURCE: U.S., 65 pp., Cont.-in-part of U. S. Ser. No. 689,818, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6015668	A	20000118	US 1996-706706	19960906
US 5912155	A	19990615	US 1995-370190	19950109
US 5939301	A	19990817	US 1995-537400	19951002

PRIORITY APPLN. INFO.: US 1994-316423 19940930
US 1995-370190 19950109
US 1995-525057 19950908
US 1995-537397 19951002
US 1995-537400 19951002
US 1995-576759 19951221
US 1996-689818 19960814

AB The method of synthesizing, sequencing, and amplifying a double strand DNA using the Thermotoga DNA polymerase and the kit required are disclosed. The invention relates to a thermostable ***DNA*** ***polymerase*** from ***Thermotoga*** ***neapolitana*** (Tne) and mutants. The mutant DNA polymerase has at least one mutation selected from the group consisting of (1) a first mutation that substantially reduces or eliminates 3'.fwdarw.5' exonuclease activity of said DNA polymerase; (2) a second mutation that substantially reduces or eliminates 5'.fwdarw.3' exonuclease activity of said DNA polymerase; (3) a third mutation in the O helix of said DNA polymerase resulting in said DNA polymerase becoming non-discriminating against dideoxynucleotides. The present invention also relates to the cloning and expression of the wild type or mutant DNA polymerases in E. coli, to DNA mols. contg. the cloned gene, and to host cells which express said genes.

L3 ANSWER 2 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:549391 CAPLUS
DOCUMENT NUMBER: 131:167095
TITLE: Mismatch cleavage enzymes from extreme thermophiles

and their uses in molecular biology techniques
INVENTOR(S): Chirikjian, Jack G.; Bazar, Leonard S.; George, Albert L.
PATENT ASSIGNEE(S): Trevigen, Inc., USA
SOURCE: PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9942595	A1	19990826	WO 1999-US3274	19990219

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

AU 9927664	A1	19990906	AU 1999-27664	19990219

PRIORITY APPLN. INFO.: US 1998-PV75194 19980219
US 1998-75194 19980219
WO 1999-US3274 19990219

AB The present invention is directed to extreme thermophilic mismatch cleavage enzymes and their uses. The gene sequence encoding Thermotoga maritma endonuclease V (TM-EndoV, also known as deoxyinosine 3'-endonuclease) is provided. TM-EndoV exhibits extreme thermophilic mismatch cleavage activity, does not exhibit resolvase activity, does not require a GATC sequence to effectuate mismatch cleavage, and does not require a divalent cation to effectuate cleavage. In one embodiment, TM-EndoV cleaves A/G, C/C, G/G, T/C, A/C, A/A, and T/T mismatches, but does not cleave T/G mismatches or a bubble formation caused by an insertion or deletion mutation. When used in conjunction with an enzyme specificity altering agent such as DMSO, however, TM-EndoV does cleave at a bubble formation caused by an insertion or deletion mutation and cleaves T/G mismatches. TM-EndoV may be used for cleavage of mismatches in the detection of mutations by probe hybridization, detecting a sequence in a target polynucleotide, and cleaving mismatches created during PCR.

L3 ANSWER 3 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:166632 CAPLUS
DOCUMENT NUMBER: 130:205910
TITLE: High fidelity polymerases and uses thereof
INVENTOR(S): Yang, Shuwei; Chatterjee, Deb K.
PATENT ASSIGNEE(S): Life Technologies, Inc., USA
SOURCE: PCT Int. Appl., 84 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 9910366 A1 19990304 WO 1998-US17810 19980828
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL. TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ. MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
AU 9891235 A1 19990316 AU 1998-91235 19980828
PRIORITY APPLN. INFO.: US 1997-56263 19970829
US 1997-60131 19970926
US 1998-85247 19980513
US 1998-141522 19980827
WO 1998-US17810 19980828

AB The present invention relates to a DNA and RNA polymerases which have increased fidelity (or reduced misincorporation rate). In particular, the invention relates to a method of making such polymerases by modifying or mutating in the nucleotide binding domain (Arg722 and/or Lys726 in ***Thermotoga*** ***neapolitana*** ***DNA*** ***polymerase***) of the polymerase (e.g., the O-helix). Such modifications include those which (1) substantially reduce 3'.fwdarw.5' exonuclease activity; (2) enhance or increase the ability of the polymerase to incorporate dideoxynucleotides into a DNA mol. about as efficiently as deoxynucleotides; and (3) substantially reduce 5'.fwdarw.3' exonuclease activity. The invention also relates to DNA mols. contg. the genes encoding the polymerases of the invention, to host cells contg. such DNA mols. and to methods to make the polymerases using the host cells. The polymerases are particularly suited for nucleic acid synthesis, sequencing, amplification and cDNA synthesis.

L3 ANSWER 4 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:571763 CAPLUS
DOCUMENT NUMBER: 131:224443
TITLE: Cloned wild-type and mutant ***DNA*** ***polymerases*** from ***Thermotoga*** ***maritima*** and their use for DNA sequencing, amplification and other genetic methods
INVENTOR(S): Chatterjee, Deb K.
PATENT ASSIGNEE(S): Life Technologies, Inc., USA
SOURCE: U.S., 67 pp., Cont.-in-part of U.S. Ser. No. 689,807, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

US 5948614 A 19990907 US 1996-706702 19960906
US 5939301 A 19990817 US 1995-537400 19951002
PRIORITY APPLN. INFO.: US 1995-525057 19950908
US 1995-537397 19951002

US 1995-537400 19951002
US 1995-576759 19951221
US 1996-689807 19960814
US 1994-316423 19940930
US 1995-370190 19950109

AB The invention relates to a substantially pure thermostable ***DNA*** ***polymerase*** from ***Thermotoga*** ***maritima*** (Tma) and ***Thermotoga*** ***neapolitana*** (Tne) and mutants thereof. The Tne DNA polymerase has a mol. wt. of about 100 kilodaltons and is more thermostable than Taq DNA polymerase. The mutant DNA polymerase has at least one mutation selected from the group consisting of (1) a first mutation that substantially reduces or eliminates 3'.fwdarw.5' exonuclease activity of the DNA polymerase; (2) a second mutation that substantially reduces or eliminates 5'.fwdarw.3' exonuclease activity of the DNA polymerase; (3) a third mutation in the O helix of the DNA polymerase resulting in the DNA polymerase becoming non-discriminating against dideoxynucleotides. The present invention also relates to the cloning and expression of the wild type or mutant DNA polymerases in E. coli, to DNA mols. contg. the cloned gene, and to host cells which express said genes. The DNA polymerases of the invention may be used in well-known DNA sequencing and amplification reactions.

L3 ANSWER 5 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:518259 CAPLUS
DOCUMENT NUMBER: 131:167101
TITLE: Cloned wild-type and mutant ***DNA*** ***polymerases*** from ***Thermotoga*** ***neapolitana*** and their use
INVENTOR(S): Hughes, A. John, Jr.; Chatterjee, Deb K.
PATENT ASSIGNEE(S): Life Technologies, Inc., USA
SOURCE: U.S., 35 pp., Cont.-in-part of U.S. Ser. No. 370,190.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5939301	A	19990817	US 1995-537400	19951002
US 5912155	A	19990615	US 1995-370190	19950109
WO 9709451	A1	19970313	WO 1996-US14189	19960906
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM				
AU 9672362	A1	19970327	AU 1996-72362	19960906
EP 871775	A1	19981021	EP 1996-933753	19960906
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
US 5948614	A	19990907	US 1996-706702	19960906
US 6015668	A	20000118	US 1996-706706	19960906

PRIORITY APPLN. INFO.: US 1994-316423 19940930

US 1995-370190 19950109
US 1995-525057 19950908
US 1995-537397 19951002
US 1995-537400 19951002
US 1995-576759 19951221
US 1996-689807 19960814
US 1996-689818 19960814
WO 1996-US14189 19960906

AB The invention relates to a substantially pure thermostable ***DNA*** ***polymerase*** from ***Thermotoga*** ***neapolitana*** (Tne) and mutants thereof. The Tne DNA polymerase has a mol. wt. of about 100 kilodaltons and is more thermostable than Taq DNA polymerase. The mutant Tne DNA polymerase has at least one mutation selected from the group consisting of (1) a first mutation that substantially reduces or eliminates 3'.fwdarw.5' exonuclease activity of said DNA polymerase; (2) a second mutation that substantially reduces or eliminates 5'.fwdarw.3' exonuclease activity of said DNA polymerase; (3) a third mutation in the O helix of said DNA polymerase resulting in said DNA polymerase becoming non-discriminating against dideoxynucleotides. The present invention also relates to the cloning and expression of the wild type or mutant Tne DNA polymerase in E. coli, to DNA mols. contg. the cloned gene, and to host cells which express said genes. The Tne DNA polymerase of the invention may be used in well-known DNA sequencing and amplification reactions.

L3 ANSWER 6 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:383989 CAPLUS
DOCUMENT NUMBER: 131:29296
TITLE: Cloned ***DNA*** ***polymerase*** from ***Thermotoga*** ***neapolitana***
INVENTOR(S): Chatterjee, Deb K.; Hughes, A. John, Jr.
PATENT ASSIGNEE(S): Life Technologies, Inc., USA
SOURCE: U.S., 17 pp., Cont.-in-part of U.S. Ser. No. 316,423, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5912155	A	19990615	US 1995-370190	19950109
CA 2174944	AA	19960411	CA 1995-2174944	19951002
WO 9610640	A1	19960411	WO 1995-US12358	19951002
W: CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 725827	A1	19960814	EP 1995-935150	19951002
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 09506783	T2	19970708	JP 1995-511997	19951002
US 5939301	A	19990817	US 1995-537400	19951002
US 6015668	A	20000118	US 1996-706706	19960906

PRIORITY APPLN. INFO.: US 1994-316423 19940930
US 1995-370190 19950109
US 1995-525057 19950908
US 1995-537397 19951002
US 1995-537400 19951002

WO 1995-US12358 19951002
US 1995-576759 19951221
US 1996-689818 19960814

AB The invention relates to a substantially pure thermostable ***DNA*** ***polymerase*** from ***Thermotoga*** ***neapolitana*** (Tne). The Tne DNA polymerase has a mol. wt. of about 100 kDa and is more thermostable than Taq DNA polymerase. The present invention also relates to the cloning and expression of the Tne DNA polymerase in Escherichia coli, to DNA mols. contg. the cloned gene, and to host cells which express said genes. The Tne DNA polymerase of the invention may be used in well-known DNA sequencing and amplification reactions.

L3 ANSWER 7 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:550530 CAPLUS
DOCUMENT NUMBER: 129:186150
TITLE: Thermostable Thermotoga DNA polymerases and use for analyzing or typing polymorphic nucleic acids
INVENTOR(S): Chatterjee, Deb K.; Solus, Joseph; Yang, Shuwei
PATENT ASSIGNEE(S): Life Technologies, Inc., USA
SOURCE: PCT Int. Appl., 189 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9835060	A1	19980813	WO 1998-US2791	19980209
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9863251	A1	19980826	AU 1998-63251	19980209

PRIORITY APPLN. INFO.: US 1997-37393 19970207
WO 1998-US2791 19980209

AB Claimed are thermostable DNA polymerases based on Thermotoga polymerases, their sequences, and their use for DNA amplification in polymorphism typing assays. The present invention provides methods for use in identifying, analyzing and typing polymorphic DNA fragments, particularly minisatellite, microsatellite or STR DNA fragments. In particular, the invention provides methods using DNA polymerases, more particularly thermostable DNA polymerases, and most particularly Thermotoga polymerases or mutants or derivs. thereof, whereby minisatellite, microsatellite or STR DNA mols. may be amplified and analyzed for polymorphisms. The invention also relates to polymerases having reduced, substantially reduced, or eliminated ability to add non-template 3' nucleotides to a synthesized nucleic acid mol. In accordance with the invention, such redn. or elimination may be accomplished by modifying or mutating the desired polymerase.

L3 ANSWER 8 OF 22 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1998:430045 CAPLUS
DOCUMENT NUMBER: 129:77566
TITLE: Nucleic acid amplification using a reversibly inactivated thermostable enzyme
INVENTOR(S): Birch, David Edward; Laird, Walter Joseph; Zoccoli, Michael Anthony
PATENT ASSIGNEE(S): Roche Molecular Systems, Inc., USA
SOURCE: U.S., 20 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5773258	A	19980630	US 1996-680283	19960711

AB A thermostable enzyme is provided which is reversibly inactivated by chem. modification, characterized in that an incubation of the chem. modified thermostable enzyme in an aq. buffer at alk. pH at a temp. .ltorsim.25.degree. results in no significant increase in enzyme activity in .ltorsim.20 min, and wherein incubation of the chem. modified enzyme in an aq. buffer, formulated to about pH 8-9 at 25.degree., at a temp. .gtorsim.50.degree. results in a .gtoreq.2-fold increase in enzyme activity in .ltorsim.20 min. The chem. modified thermostable enzyme can be used for the amplification of nucleic acids, whereby the activity of the inactivated enzyme is recovered by an incubation of the reaction mixt. at an elevated temp. prior to, or as part of, the amplification reaction. The modification reagent is a dicarboxylic acid anhydride such as maleic anhydride, citraconic anhydride, cis-aconitic anhydride, 2,3-dimethylmaleic anhydride, 3,4,5,6-tetrahydrophthalic anhydride, or exo-cis-3,6-endoxo-.DELTA.4-tetrahydrophthalic anhydride. For example, citraconylation of Taq DNA polymerase yields a modified enzyme with the desired properties for nucleic acid amplification in a PCR system.

L3 ANSWER 9 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:154804 CAPLUS
DOCUMENT NUMBER: 128:189207
TITLE: Modified thermostable DNA polymerase and its use in DNA sequence determination
INVENTOR(S): Gelfand, David Harrow; Kalman, Lisa Vivian; Reichert, Fred Lawrence
PATENT ASSIGNEE(S): F. Hoffmann-La Roche A.-G., Switz.
SOURCE: Eur. Pat. Appl., 29 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 823479	A2	19980211	EP 1997-113182	19970731
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
CA 2210951	AA	19980206	CA 1997-2210951	19970801

NO 9703595 A 19980209 NO 1997-3595 19970805
BR 9704260 A 19980915 BR 1997-4260 19970805
US 5939292 A 19990817 US 1997-906484 19970805
AU 9733197 A1 19980212 AU 1997-33197 19970806
JP 10066588 A2 19980310 JP 1997-212350 19970806
PRIORITY APPLN. INFO.: US 1996-23376 19960806
OTHER SOURCE(S): MARPAT 128:189207

AB The invention provides thermostable DNA polymerase enzymes that comprises the amino acid sequence SerGlnIleXaaLeuArgXaa, wherein "Xaa" at position 4 of this sequence is any amino acid residue but not a glutamic acid residue (Glu), preferably a glycine residue and "Xaa" at position 7 of this sequence is a valine residue (Val) or an isoleucine residue (Ile). The thermostable DNA polymerases of the invention have enhanced efficiency for incorporating unconventional nucleotides, such as ribonucleotides, into DNA products and are advantageous in many in vitro synthesis applications. Such enzymes are particularly useful for use in nucleic acid sequencing protocols and provide novel means for DNA sequence anal. with cost and efficiency advantages. Also claimed are nucleic acids encoding said polymerases, vectors and hoste cells comprising such a nucleic acid, as well as compns. for use in a DNA sequencing reaction, kits and methods for sequencing including such polymerases. The DNA polymerase gene of Thermus aquaticus is revealed.

L3 ANSWER 10 OF 22 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 1
ACCESSION NUMBER: 1999:26518 CAPLUS
DOCUMENT NUMBER: 130:207163
TITLE: The hyperthermophilic bacterium Thermotoga maritima has two different classes of family C DNA polymerases: evolutionary implications
AUTHOR(S): Huang, Yi-Ping; Ito, Junetsu
CORPORATE SOURCE: Department of Microbiology and Immunology, The University of Arizona, Tucson, AZ, 85724, USA
SOURCE: Nucleic Acids Res. (1998), 26(23), 5300-5309
CODEN: NARHAD; ISSN: 0305-1048
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Bacterial DNA polymerase III (family C DNA polymerase), the principal chromosomal replicative enzyme, is known to occur in at least three distinct forms which have provisionally been classified as class I (Escherichia coli DNA pol C-type), class II (Bacillus subtilis DNA pol C-type) and class III (cyanobacteria DNA pol C-type). We have identified two family C ***DNA*** ***polymerase*** sequences in the hyperthermophilic bacterium ***Thermotoga*** ***maritima*** . One DNA polymerase consisting of 842 amino acid residues and having a mol. wt. of 97 213 belongs to class I. The other one, consisting of 1367 amino acid residues and having a mol. wt. of 155 361, is a member of class II. Comparative sequence analyses suggest that the class II DNA polymerase is the principal DNA replicative enzyme of the microbe and that the class I DNA polymerase may be functionally inactive. A phylogenetic anal. using the class II enzyme indicates that T. maritima is closely related to the low G+C Gram-pos. bacteria, in particular to Clostridium acetobutylicum, and mycoplasmas. These results are in conflict with 16S rRNA-based phylogenies, which placed T. maritima as one of the deepest branches of the bacterial tree.

L3 ANSWER 11 OF 22 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 2
ACCESSION NUMBER: 1998:663452 CAPLUS
DOCUMENT NUMBER: 130:21096
TITLE: Capacity of nine thermostable DNA polymerases to mediate DNA amplification in the presence of PCR-inhibiting samples
AUTHOR(S): Al-Soud, Waleed Abu; Radstrom, Peter
CORPORATE SOURCE: Applied Microbiology, Center for Chemistry and Chemical Engineering, Lund Institute of Technology, Lund University, Lund, SE-221 00, Swed.
SOURCE: Appl. Environ. Microbiol. (1998), 64(10), 3748-3753
CODEN: AEMIDF; ISSN: 0099-2240
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The PCR is an extremely powerful method for detecting microorganisms. However, its full potential as a rapid detection method is limited by the inhibition of the thermostable DNA polymerase from Thermus aquaticus by many components found in complex biol. samples. In this study, we have compared the effects of known PCR-inhibiting samples on nine thermostable DNA polymerases. Samples of blood, cheese, feces, and meat, as well as various ions, were added to PCR mixts. contg. various thermostable DNA polymerases. The nucleic acid amplification capacity of the nine polymerases, under buffer conditions recommended by the manufacturers, was evaluated by using a PCR-based detection method for Listeria monocytogenes in the presence of purified template DNA and different concns. of PCR inhibitors. The AmpliTaq Gold and the Taq DNA polymerases from Thermus aquaticus were totally inhibited in the presence of 0.004% (vol/vol) blood in the PCR mixt., while the HotTub, Pwo, rTth, and Tft DNA polymerases were able to amplify DNA in the presence of 20% (vol/vol) blood without reduced amplification sensitivity. The ***DNA*** ***polymerase*** from ***Thermotoga*** ***maritima*** (Ultma) was found to be the most susceptible to PCR inhibitors present in cheese, feces, and meat samples. When the inhibitory effect of K and Na ions was tested on the nine polymerases, HotTub from Thermus flavus and rTth from Thermus thermophilus were the most resistant. Thus, the PCR-inhibiting effect of various components in biol. samples can, to some extent, be eliminated by the use of the appropriate thermostable DNA polymerase.

L3 ANSWER 12 OF 22 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 3
ACCESSION NUMBER: 1998:747283 CAPLUS
DOCUMENT NUMBER: 130:120102
TITLE: Accuracy of replication in the polymerase chain reaction. Comparison between ***Thermotoga*** ***maritima*** ***DNA*** ***polymerase*** and Thermus aquaticus ***DNA*** ***polymerase***
AUTHOR(S): Diaz, R. S.; Sabino, E. C.
CORPORATE SOURCE: Laboratorio de Retrovirologia, Universidade Federal de Sao Paulo, Sao Paulo, Brazil
SOURCE: Braz. J. Med. Biol. Res. (1998), 31(10), 1239-1242
CODEN: BJMRDK; ISSN: 0100-879X
PUBLISHER: Associacao Brasileira de Divulgacao Cientifica
DOCUMENT TYPE: Journal
LANGUAGE: English
AB For certain applications of the polymerase chain reaction (PCR), it may be

necessary to consider the accuracy of replication. The breakthrough that made PCR user friendly was the commercialization of Thermus aquaticus (Taq) DNA polymerase, an enzyme that would survive the high temps. needed for DNA denaturation. The development of enzymes with an inherent 3' to 5' exonuclease proofreading activity, lacking in Taq polymerase, would be an improvement when higher fidelity is needed. We used the forward mutation assay to compare the fidelity of Taq polymerase and ***Thermotoga*** ***maritima*** (ULTMATM) ***DNA*** ***polymerase*** , an enzyme that does have proofreading activity. We did not find significant differences in the fidelity of either enzyme, even when using optimal buffer conditions, thermal cycling parameters, and no. of cycles (0.2% and 0.13% error rates for ULTMATM and Taq, resp., after reading about 3,000 bases each). We conclude that for sequencing purposes there is no difference in using a DNA polymerase that contains an inherent 3' to 5' exonuclease activity for DNA amplification. Perhaps the specificity and fidelity of PCR are complex issues influenced by the nature of the target sequence, as well as by each PCR component.

L3 ANSWER 13 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:281157 CAPLUS
DOCUMENT NUMBER: 126:260879
TITLE: Amino acid substituted DNA polymerases from Thermotoga lacking exonuclease activities and their uses
INVENTOR(S): Chatterjee, Deb K.; Hughes, A. John, Jr.
PATENT ASSIGNEE(S): Chatterjee, Deb K., USA; Hughes, A. John, Jr.
SOURCE: PCT Int. Appl., 120 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9709451	A1	19970313	WO 1996-US14189	19960906
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM				
US 5939301	A	19990817	US 1995-537400	19951002
AU 9672362	A1	19970327	AU 1996-72362	19960906
EP 871775	A1	19981021	EP 1996-933753	19960906
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.: US 1995-525057 19950908
US 1995-537397 19951002
US 1995-537400 19951002
US 1995-576759 19951221
US 1996-689818 19960814
US 1994-316423 19940930
US 1995-370190 19950109
WO 1996-US14189 19960906

AB Analogs of thermostable Tne (***Thermotoga*** ***neapolitana***)

and Tma (T. maritima) ***DNA*** ***polymerases*** of Thermotoga that have little or no 5'.fwdarw.3' or 3'.fwdarw.5' exonuclease activity or are less discriminating against 2',3'-dideoxynucleotides are described for use in DNA sequencing, labeling, amplification and cDNA synthesis. The Tne DNA polymerase has a mol. wt. of about 100,000 and is more thermostable than Taq DNA polymerase. The enzymes are manufd. by expression of the cloned gene in Escherichia coli. The genes for these enzymes were cloned by expression in E. coli. Amino acids essential for the exonuclease and discriminatory activities were identified by sequence comparison. Substitution and deletion analogs were prepd. by std. methods of mutagenesis and expression. Elimination of the exonuclease activities increased the readable length of DNA sequences to >400 bases and signal strength by about 5-fold.

L3 ANSWER 14 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:684232 CAPLUS
DOCUMENT NUMBER: 127:327443
TITLE: Nucleic acid amplification using a reversibly inactivated thermostable enzyme
INVENTOR(S): Birch, David Edward; Laird, Walter Joseph; Zoccoli, Michael Anthony
PATENT ASSIGNEE(S): Roche Molecular Systems, Inc., USA
SOURCE: U.S., 20 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5677152	A	19971014	US 1996-684108	19960719

OTHER SOURCE(S): MARPAT 127:327443
AB A thermostable enzyme is provided which is reversibly inactivated by chem. modification, characterized in that an incubation of the chem. modified thermostable enzyme in an aq. buffer at alk. pH at a temp. .ltorsim.25.degree. results in no significant increase in enzyme activity in .ltorsim.20 min, and wherein incubation of the chem. modified enzyme in an aq. buffer, formulated to about pH 8-9 at 25.degree., at a temp. .gtorsim.50.degree. results in a .gtoreq.2-fold increase in enzyme activity in .ltorsim.20 min. The chem. modified thermostable enzyme can be used for the amplification of nucleic acids, whereby the activity of the inactivated enzyme is recovered by an incubation of the reaction mixt. at an elevated temp. prior to, or as part of, the amplification reaction. The modification reagent is a dicarboxylic acid anhydride such as maleic anhydride, citraconic anhydride, cis-aconitic anhydride, 2,3-dimethylmaleic anhydride, 3,4,5,6-tetrahydrophthalic anhydride, or exo-cis-3,6-endoxo-.DELTA.4-tetrahydrophthalic anhydride.

L3 ANSWER 15 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:347209 CAPLUS
DOCUMENT NUMBER: 126:313176
TITLE: Nucleic acid amplification using a reversibly inactivated thermostable enzyme
INVENTOR(S): Birch, David Edward; Laird, Walter Joseph; Zoccoli, Michael Anthony

PATENT ASSIGNEE(S): F.Hoffmann-La Roche Ag, Switz.
SOURCE: Can. Pat. Appl., 37 pp.
CODEN: CPXXEB
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CA 2184105	AA	19970226	CA 1996-2184105	19960823
EP 771870	A1	19970507	EP 1996-113222	19960817
EP 771870	B1	19990203		
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE				
AT 176499	E	19990215	AT 1996-113222	19960817
ES 2101668	T3	19990701	ES 1996-113222	19960817
AU 9662179	A1	19970313	AU 1996-62179	19960821
AU 689047	B2	19980319		
NO 9603541	A	19970226	NO 1996-3541	19960823
CN 1151437	A	19970611	CN 1996-113219	19960825
JP 09103292	A2	19970422	JP 1996-240996	19960826
BR 9603563	A	19980519	BR 1996-3563	19960826

PRIORITY APPLN. INFO.: US 1995-2673 19950825
OTHER SOURCE(S): MARPAT 126:313176
AB A thermostable enzyme is provided which is reversibly inactivated by chem. modification, characterized in that an incubation of the chem. modified thermostable enzyme in an aq. buffer at alk. pH at a temp. .ltorsim.25.degree. results in no significant increase in enzyme activity in .ltorsim.20 min, and wherein incubation of the chem. modified enzyme in an aq. buffer, formulated to about pH 8-9 at 25.degree., at a temp. .gtorsim.50.degree. results in a .gtoreq.2-fold increase in enzyme activity in .ltorsim.20 min. The chem. modified thermostable enzyme can be used for the amplification of nucleic acids, whereby the activity of the inactivated enzyme is recovered by an incubation of the reaction mixt. at an elevated temp. prior to, or as part of, the amplification reaction. The modification reagent is a dicarboxylic acid anhydride such as maleic anhydride, citraconic anhydride, cis-aconitic anhydride, 2,3-dimethylmaleic anhydride, 3,4,5,6-tetrahydrophthalic anhydride, or exo-cis-3,6-endoxo-.DELTA.4-tetrahydrophthalic anhydride. For example, citraconylation of Taq DNA polymerase yields a modified enzyme with the desired properties for nucleic acid amplification in a PCR system.

L3 ANSWER 16 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:168532 CAPLUS
DOCUMENT NUMBER: 126:154434
TITLE: Thermophilic ***DNA*** ***polymerases*** from ***Thermotoga*** ***neapolitana***
INVENTOR(S): Slater, Michael R.; Huang, Fen; Hartnett, James R.; Bolchakova, Elena; Storts, Douglas R.; Otto, Paul; Miller, Katharine M.
PATENT ASSIGNEE(S): Promega Corporation, USA
SOURCE: PCT Int. Appl., 200 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9641014	A1	19961219	WO 1996-US9641	19960607
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN				
US 6001645	A	19991214	US 1995-484661	19950607
AU 9662640	A1	19961230	AU 1996-62640	19960607
AU 705179	B2	19990520		
EP 873420	A1	19981028	EP 1996-921407	19960607
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI				

PRIORITY APPLN. INFO.: US 1995-484661 19950607
US 1996-656664 19960531
WO 1996-US9641 19960607

AB Thermostable DNA polymerases are provided derived from the hyperthermophilic eubacterium known as Thermotoga neapolitana (Tne). The wild-type gene was isolated and sequenced and shown to code for a 893-amino-acid enzyme. Specific alterations of the Tne polymerase gene were: deletions between residues 1-849, 1-945, 1-966, and 1-849 and 924-1272; and substitutions at residues 945, 947, 967, 968, 975, 1166, 1167, 1391, 1402, 1407, 1410, 2184, 2189. To construct mutant Tne polymerases lacking 5' to 3' exonuclease activity, deletions mutants of the Tne polymerase gene were generated which removed sequences encoding a large portion of the 5' to 3' exonuclease domain located at the N-terminus of the Tne polymerase. Modified forms of the Tne polymerase which possess varying amts. of 3' to 5' exonuclease activity, 7 different point mutants and 2 deletions mutants were created. The Tne Quad polymerase comprises the deletion of residues 1-283 from the N-terminus and contains e amino substitutions at residues 323 (alanine), 389 (alanine), and 730 (tyrosine). The modified Tne polymerases utilize a broader range of optimal deoxynucleotide triphosphate concns. in PCR, tolerate a broader range of Mg2+, and have improved characteristics for applications such as thermal cycle sequencing, PCR, and long PCR. Redn. in 3' exonuclease results in a lowered fidelity for the modified Tne polymerases, which is advantageous when mutagenic PCR is to be performs. Addn. of a small amt. of the high fidelity Thermococcus litoralis DNA polymerase to the modified Tne polymerases greatly improves the fidelity of the overall reaction. The T. neapolitana DNA polymerases of the present invention are used in combination with other compds., including but not limited to pyrophosphatase and DNA polymerases from other thermophilic or hyperthermophilic organisms.

L3 ANSWER 17 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1996:388345 CAPLUS
DOCUMENT NUMBER: 125:52372
TITLE: Cloning of gene for thermostable ***DNA*** ***polymerases*** from ***Thermotoga*** ***neapolitana*** and mutants thereof characterization of the enzymes
INVENTOR(S): Hughes, A. John, Jr.; Chatterjee, Deb K.

PATENT ASSIGNEE(S): Life Technologies, Inc., USA
SOURCE: PCT Int. Appl., 66 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9610640	A1	19960411	WO 1995-US12358	19951002
W: CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5912155	A	19990615	US 1995-370190	19950109
EP 725827	A1	19960814	EP 1995-935150	19951002
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 09506783	T2	19970708	JP 1995-511997	19951002

PRIORITY APPLN. INFO.: US 1994-316423 19940930
US 1995-370190 19950109
WO 1995-US12358 19951002

AB The invention relates to a substantially pure thermostable ***DNA*** ***polymerase*** from ***Thermotoga*** ***neapolitana*** (Tne) and mutants thereof. The Tne DNA polymerase has a mol. wt. of about 100 kilodaltons and is more thermostable than Taq DNA polymerase. The mutant Tne DNA polymerase has at least one mutation selected from the group consisting of (1) a first mutation that substantially reduces or eliminates 3' .fwdarw. 5' exonuclease activity of said DNA polymerase; (2) a second mutation that substantially reduces or eliminates 5' .fwdarw. 3' exonuclease activity of said DNA polymerase; (3) a third mutation in the O helix of said DNA polymerase resulting in said DNA polymerase becoming non-discriminating against dideoxynucleotides. The present invention also relates to the cloning and expression of the wild type or mutant Tne DNA polymerase in E. coli, to DNA mols. contg. the cloned gene, and to host cells which express said genes. The Tne DNA polymerase of the invention may be used in well-known DNA sequencing and amplification reactions.

L3 ANSWER 18 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1996:590888 CAPLUS
DOCUMENT NUMBER: 125:214263
TITLE: Combination of exonuclease-positive DNA polymerase and exonuclease-negative DNA polymerase in improved polymerase chain reaction
INVENTOR(S): Sorge, Joseph A.; Mullinax, Rebecca L.
PATENT ASSIGNEE(S): Stratagene, USA
SOURCE: U.S., 26 pp. Cont.-in-part of U.S. Ser. No. 164, 290.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5556772	A	19960917	US 1994-197791	19940216
WO 9516028	A1	19950615	WO 1994-US14065	19941207
W: CA, JP				

RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
PRIORITY APPLN. INFO.: US 1993-164290 19931208
US 1994-197791 19940216

AB The subject invention provides novel compns. contg. a mixt. of (a) an enzyme that possesses substantial 3'-5' exonuclease activity (b) a DNA polymerase with less 3'-5' exonuclease activity than the enzyme with substantial 3'-5' exonuclease activity. Preferably, the DNA polymerase for inclusion in the compns. are DNA polymerases that substantially lack 3'-5' exonuclease activity. A preferred embodiment of the invention is a compn. comprising the Taq DNA polymerase (isolated from Thermus aquaticus) and the Pfu DNA polymerase (isolated from Pyrococcus furiosus). Another aspect of the invention is to provide methods for synthesizing polynucleotides, typically DNA, using compns. comprising an enzyme that possesses substantial 3'-5' exonuclease activity and a DNA polymerase with less 3'-5' exonuclease activity than the enzymes possessing substantial 3'-5' exonuclease activity, preferably a DNA polymerase that substantially lacks 3'-5' exonuclease activity. Another aspect of the invention involves the use the subject method of polynucleotide synthesis to carry out the synthesis step in a polymerase chain reaction expt. Yet another aspect of the invention is to provide kits for the synthesis of polynucleotides, wherein the kits comprise an enzyme that possesses substantial 3'-5' exonuclease activity and a DNA polymerase with less 3'-5' exonuclease activity than the enzyme possessing substantial 3'-5' exonuclease activity. Expts. using Taq (Thermus aquaticus; 3'.fwdarw.5' exonuclease-neg.) and Pfu (Pyrococcus furiosus; 3'.fwdarw.5' exonuclease-pos.) DNA polymerases were conducted. Using hybridoma and peripheral blood lymphocyte templates and primers contg. 0, 1 or 2 3'-mismatches, Taq polymerase could only extend those primers not contg. mismatches under the conditions used. The combination of Taq and Pfu polymerases allowed extension of all primers and resulted in more product in some samples. The effects of Taq to Pfu polymerase ratios, template concn., and annealing temp. were also examd.

L3 ANSWER 19 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1995:377249 CAPLUS
DOCUMENT NUMBER: 122:153369
TITLE: Truncated Thermus DNA polymerases with enhanced thermostability and DNA polymerase formulations for enhancement of nucleic acid amplification
INVENTOR(S): Barnes, Wayne M.
PATENT ASSIGNEE(S): USA
SOURCE: PCT Int. Appl., 78 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9426766	A1	19941124	WO 1994-US1867	19940222
W: AU, CA, JP, NZ				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5436149	A	19950725	US 1993-21623	19930219
CA 2156176	AA	19941124	CA 1994-2156176	19940222
AU 9462464	A1	19941212	AU 1994-62464	19940222

AU 671204 B2 19960815
EP 693078 A1 19960124 EP 1994-909742 19940222
EP 693078 B1 19990623
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE
JP 11501801 T2 19990216 JP 1994-522506 19940222
JP 2885324 B2 19990419
AT 181573 E 19990715 AT 1994-909742 19940222
JP 11239492 A2 19990907 JP 1998-359199 19940222
PRIORITY APPLN. INFO.: US 1993-21623 19930219
US 1994-202032 19940222
JP 1994-522506 19940222
WO 1994-US1867 19940222

AB A DNA polymerase having an amino acid sequence comprising substantially the same amino acid sequence as that of Thermus aquaticus or Thermus flavus DNA polymerase, excluding the N-terminal 280 amino acid residues of Thermus aquaticus DNA polymerase or the N-terminal 279 amino acid residues of Thermus flavus DNA polymerase, and recombinant DNA sequences encoding said DNA polymerases are claimed. A formulation of thermostable or other DNA polymerases comprising a majority component comprised of at least one thermostable or other DNA polymerase of the type described above, wherein the DNA polymerase lacks 3'-exonuclease activity, and a minority component comprised of at least one thermostable DNA polymerase exhibiting 3'-exonuclease activity, and an improved method for enzymic extension of DNA strands, esp. while, but not limited to, amplifying nucleic acid sequences by polymerase chain reaction wherein the above formulation is made and used to catalyze primer extension, are also provided. Expression vector pWB254, encoding Klentaq-278 (the T. aquaticus DNA polymerase deriv.), was prepd. E. coli contg. this plasmid were used to prep. the enzyme and large-scale purifn. of the enzyme was performed. In a PCR expt., exposure to 98.degree. was not detectably detrimental to Klentaq-278. Using a 640:1 mixt. of this enzyme with Pyrococcus furiosus DNA polymerase, efficient amplification of 8.4, 12.5, 15, and 18 kb DNA fragments was demonstrated. The fidelity of the product amplified was at least equal to that obtained using P. furiosus DNA polymerase alone.

L3 ANSWER 20 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1995:367685 CAPLUS
DOCUMENT NUMBER: 122:153388
TITLE: Cloning and expression of ***Thermotoga*** ***maritima*** gene for thermostable ***DNA*** ***polymerase***
INVENTOR(S): Gelfand, David H.; Lawyer, Frances C.
PATENT ASSIGNEE(S): Hoffmann-la Roche Inc., USA
SOURCE: U.S., 22 pp. Cont.-in-part of U.S. Ser. No.143,441, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 26
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5374553	A	19941220	US 1990-567244	19900813
US 4889818	A	19891226	US 1987-63509	19870617
CA 2089495	AA	19920214	CA 1991-2089495	19910813

WO 9203556 A1 19920305 WO 1991-US5753 19910813
W: AU, CA, JP, US
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE
AU 9185014 A1 19920317 AU 1991-85014 19910813
AU 653747 B2 19941013
EP 544789 A1 19930609 EP 1991-915802 19910813
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE
JP 06500020 T2 19940106 JP 1991-514681 19910813
JP 07108220 B4 19951122
US 5352600 A 19941004 US 1992-971798 19921105
US 5420029 A 19950530 US 1993-971819 19930203
US 5407800 A 19950418 US 1993-80243 19930617
US 5455170 A 19951003 US 1993-113531 19930827
US 5618703 A 19970408 US 1994-199509 19940222
US 5641864 A 19970624 US 1994-311612 19940922
JP 07147990 A2 19950613 JP 1994-253968 19941019
JP 2584198 B2 19970219
US 5618711 A 19970408 US 1995-384490 19950206
US 5789224 A 19980804 US 1995-459383 19950602
US 5795762 A 19980818 US 1995-458819 19950602
US 5674738 A 19971007 US 1995-520422 19950829
JP 08298991 A2 19961119 JP 1996-117847 19960513
PRIORITY APPLN. INFO.: US 1986-899241 19860822
US 1987-63509 19870617
US 1988-143441 19880112
US 1989-387174 19890728
US 1989-455611 19891222
US 1989-455967 19891222
US 1990-523394 19900515
US 1990-557517 19900724
US 1990-567244 19900813
US 1990-585471 19900920
US 1990-590213 19900928
US 1990-590466 19900928
US 1990-590490 19900928
US 1990-609157 19901102
JP 1994-253968 19910813
WO 1991-US5753 19910813
US 1991-746121 19910815
US 1992-880478 19920506
US 1993-977434 19930223
US 1993-82182 19930624
US 1993-113531 19930827
US 1993-148133 19931102
US 1994-199509 19940222
US 1995-384490 19950206

AB DNA encoding the title enzyme, expression vectors contg. the DNA, host cells contg. the expression vectors, and manuf. of the DNA polymerase with these recombinant cells are claimed. The enzyme has a mol. wt. of about 97 kD and DNA polymerase I activity. The purified enzyme was used in a PCR. Expression vectors for Escherichia coli were prepd.

L3 ANSWER 21 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1993:118290 CAPLUS
DOCUMENT NUMBER: 118:118290
TITLE: Analogs of a thermostable DNA polymerases with altered

5'.fwdarw.3' exonuclease activity and their manufacture

INVENTOR(S): Gelfand, David H.; Abramson, Richard D.
PATENT ASSIGNEE(S): Cetus Corp., USA
SOURCE: PCT Int. Appl., 85 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 26
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9206200	A1	19920416	WO 1991-US7035	19910930
W: AU, CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
CA 2090614	AA	19920329	CA 1991-2090614	19910930
AU 9186688	A1	19920428	AU 1991-86688	19910930
AU 663474	B2	19951012		
EP 550687	A1	19930714	EP 1991-919358	19910930
EP 550687	B1	19990609		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
JP 05506364	T2	19930922	JP 1991-516787	19910930
JP 10000095	A2	19980106	JP 1997-70200	19910930
JP 10004985	A2	19980113	JP 1997-70163	19910930
JP 10004965	A2	19980113	JP 1997-70192	19910930
EP 894860	A1	19990203	EP 1998-115951	19910930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
AT 181106	E	19990615	AT 1991-919358	19910930
ES 2134198	T3	19991001	ES 1991-919358	19910930
US 5466591	A	19951114	US 1993-977434	19930223
US 5455170	A	19951003	US 1993-113531	19930827
US 5795762	A	19980818	US 1995-458819	19950602
US 5674738	A	19971007	US 1995-520422	19950829
AU 9640868	A1	19960426	AU 1996-40868	19960108
AU 691374	B2	19980514		

PRIORITY APPLN. INFO.: US 1990-590213 19900928
US 1990-590466 19900928
US 1990-590490 19900928
US 1986-899241 19860822
US 1987-63509 19870617
US 1988-143441 19880112
US 1989-455611 19891222
US 1990-523394 19900515
US 1990-557517 19900724
US 1990-585471 19900920
US 1990-609157 19901102
US 1991-746121 19910815
EP 1991-919358 19910930
JP 1991-516787 19910930
WO 1991-US7035 19910930
US 1993-977434 19930223
US 1993-113531 19930827

AB Thermostable DNA polymerase mutants with greater or lesser 5'.fwdarw.3' exonuclease activity are prepd. by expression of the corresponding genes in Escherichia coli. The genes for the thermostable DNA polymerases are

selecteded from Thermus sps17, Thermus Z05, Thermus aquaticus, Thermus thermophilus, Thermosipho africanus, and Thermotoga maritima and are mutagenized by substitution or deletion involving site-specific mutation and polymerase chain reaction (PCR). Prepn. of analogs of the Taq DNA polymerase of Thermus aquaticus and other species was demonstrated and their defined nucleotide and amino acid sequences given.

L3 ANSWER 22 OF 22 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1992:546202 CAPLUS
DOCUMENT NUMBER: 117:146202
TITLE: A thermostable ***DNA*** ***polymerase*** I from ***Thermotoga*** ***maritima***
INVENTOR(S): Gelfand, David H.; Lawyer, Frances C.; Stoffel, Susanne
PATENT ASSIGNEE(S): Cetus Corp., USA
SOURCE: PCT Int. Appl., 67 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 26
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9203556	A1	19920305	WO 1991-US5753	19910813
W: AU, CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
US 5374553	A	19941220	US 1990-567244	19900813
AU 9185014	A1	19920317	AU 1991-85014	19910813
AU 653747	B2	19941013		
EP 544789	A1	19930609	EP 1991-915802	19910813
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
JP 06500020	T2	19940106	JP 1991-514681	19910813
JP 07108220	B4	19951122		
US 5420029	A	19950530	US 1993-971819	19930203

PRIORITY APPLN. INFO.: US 1990-567244 19900813
US 1986-899241 19860822
US 1987-63509 19870617
US 1988-143441 19880112
WO 1991-US5753 19910813

AB A thermostable DNA polymerase I is obtained from the anaerobic hyperthermophilic bacterium Thermotoga maritima and the corresponding gene cloned and expressed in Escherichia coli. The enzyme is useful in polymerase chain reaction (PCR) and other temp.-cycling amplification nucleic acid amplification methods. The enzyme was purified from cell lysates chromatog. The gene was then cloned by PCR using primers derived from conserved sequences of thermostable DNA polymerases to obtain a fragment that was used as a probe to screen a gene bank. The gene was expressed in E. coli from the .lambda. PL promoter. The protein, or an N-terminal deletion analog of it lacking the N-terminal 283 amino acids had half-lives at 95.degree. >2-fold longer than that of Taq polymerase.

EAST 03/11/03

Tma

	U		Document ID	Issue Date	Pages	Title	Current OR
1	☒	☒	US 6008025 A	19991228	33	Modified thermostable DNA polymerase derived from pyrococcus sp. KOD and DNA polymerase composition thereof for nucleic acid amplification	435/91.2
2	☒	☒	US 5994056 A	19991130	23	Homogeneous methods for nucleic acid amplification and detection	435/6
3	☒	☒	US 5968799 A	19991019	30	Purified thermostable nucleic acid polymerase enzyme from thermosipho africanus	435/194
4	☒	☒	US 5795762 A	19980818	65	5' to 3' exonuclease mutations of thermostable DNA polymerases	435/194
5	☒	☒	US 5773258 A	19980630	20	Nucleic acid amplification using a reversibly inactivated thermostable enzyme	435/91.2
6	☒	☒	US 5766888 A	19980616	25	Detection of carcinoma metastases by nucleic acid amplification	435/91.2
7	☒	☒	US 5693517 A	19971202	36	Reagents and methods for coupled high temperature reverse transcription and polymerase chain reactions	435/193
8	☒	☒	US 5677152 A	19971014	20	Nucleic acid amplification using a reersibly inactivated thermostable enzyme	435/91.2
9	☒	☒	US 5674738 A	19971007	27	DNA encoding thermostable nucleic acid polymerase enzyme from thermus species Z05	435/252.3
10	☒	☒	US 5641864 A	19970624	29	Kits for high temperature reverse transcription of RNA	530/350

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11	☐	☒	US 5624833 A	19970429	38	Purified thermostable nucleic acid polymerase enzyme from Thermotoga ~~maritima~~	435/194
12	☒	☒	US 5620847 A	19970415	47	Methods and reagents for detection of bacteria in cerebrospinal fluid	435/6
13	☒	☒	US 5618703 A	19970408	28	Unconventional nucleotide substitution in temperature selective RT-PCR	435/91.2
14	☒	☒	US 5602011 A	19970211	19	Purified Thermococcus barossii DNA polymerase	435/91.2
15	☒	☒	US 5561058 A	19961001	41	Methods for coupled high temperatures reverse transcription and ~~polymerase chain reactions~~	435/91.2
16	☒	☒	US 5556772 A	19960917	26	Polymerase compositions and uses thereof	435/91.2
17	☒	☒	US 5543296 A	19960806	18	Detection of carcinoma metastases by nucleic acid amplification	435/6
18	☒	☒	US 5512462 A	19960430	19	Methods and reagents for the polymerase chain reaction amplification of ~~long DNA sequences~~	435/91.2
19	☒	☒	US 5466591 A	19951114	67	5' to 3' exonuclease mutations of thermostable DNA polymerases	435/194
20	☒	☒	US 5455170 A	19951003	23	Mutated thermostable nucleic acid polymerase enzyme from Thermus species ~~Z05~~	435/252.3
21	☒	☒	US 5420029 A	19950530	40	Mutated thermostable nucleic acid polymerase enzyme from thermotoga ~~maritima~~	435/194

	U		Document ID	Issue Date	Pages	Title	Current OR
22	☒	☒	US 5407800 A	19950418	24	Reverse transcription with Thermus thermophilus polymerase	435/6
23	☐	☒	US 5374553 A	19941220	22	DNA encoding a thermostable nucleic acid polymerase enzyme from ~~thermotoga maritima~~	435/252.3
24	☒	☒	US 5314809 A	19940524	16	Methods for nucleic acid amplification	435/91.2
25	☒	☒	US 5310652 A	19940510	26	Reverse transcription with thermostable DNA polymerase-high temperature ~~reverse transcription~~	435/6
26	☒	☐	US 6015668 A	20000118	65	Cloned DNA polymerases from thermotoga and mutants thereof	435/6
27	☒	☐	US 6001645 A	19991214		Thermophilic DNA polymerases from thermotoga neapolitana	435/320.1
28	☒	☐	US 5948614 A	19990907	67	Cloned DNA polymerases from thermotoga maritima and mutants thereof	435/6
29	☒	☐	US 5939292 A	19990817		Thermostable DNA polymerases having reduced discrimination against ~~ribo-NTPs~~	435/91.2

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1	☐	☐	US 6015668 A	20000118	65	Cloned DNA polymerases from thermotoga and mutants thereof	435/6
2	☐	☐	US 6001645 A	19991214	90	Thermophilic DNA polymerases from thermotoga neapolitana	435/320.1
3	☒	☐	US 5948614 A	19990907	67	Cloned DNA polymerases from thermotoga maritima and mutants thereof	435/6
4	☒	☐	US 5939301 A	19990817	35	Cloned DNA polymerases from Thermotoga neapolitana and mutants thereof	435/194
5	☒	☐	US 5939292 A	19990817	19	Thermostable DNA polymerases having reduced discrimination against ribo-NTPs	435/91.2
6	☒	☐	US 5912155 A	19990615	17	Cloned DNA polymerases from Thermotoga neapolitana	435/194
7	☒	☐	US 5861295 A	19990119	12	Nucleic acid-free thermostable enzymes and methods of production thereof	435/194